

Our Ref: ID 3713
Your Ref: SSD-59155459

25 March 2026

Nicholas Kumar
Department of Planning, Housing & Infrastructure
Locked Bag 5022
Parramatta NSW 2124

Via Major Portal

email: nicholas.kumar@dpie.nsw.gov.au
CC: amanda.pollock@ses.nsw.gov.au

Dear Nicholas,

State Significant Development Application for Merino Solar Farm

Thank you for the opportunity to provide advice on the State Significant Development Application (SSDA) for the Merino Solar Farm. The subject site is situated predominately in the locality of Turrannville and partly in the locality of Gundary, in the Goulburn Mulwaree Local Government Area (LGA).

It is understood that the Project proposed includes the construction, operation and eventual decommissioning of a solar farm that would be connected into the electricity grid. During its operational life of approximately 35 years, it would provide electricity generation and storage. The Project will provide up to **500 full-time equivalent (FTE)** jobs during construction and **10-12 FTE staff once operational**, with additional casual staff for maintenance, and includes:¹

- A solar generating capacity of 450MW (AC) with approximately 870,000 single axis tracker (east-west) solar panels, maximum height of 2.9m and inter row spacing up to 7m
- Two 250MW inverter stations – 3.5m high
- Substation and 450MW/1800MWhr (AC) BESS located in a designated area of approximately 32ha some components such as lightning rods up to 9m high
- Up to two high voltage transformers
- Site office approximately 4 m x 20m x 5 m (high)
- Switch room approximately 4 m x 18 m x 4m (high)
- Transmission lines

¹ NGH. 2025. Environmental Impact Statement, page xxii

We note that the proposal also includes road upgrades, including:²

- Channelised Right Turn at the Windellama Road site access (access 1)
- Short auxiliary left turn treatment at the Braidwood Road / Painters Lane intersection (access 2)
- Rural driveway accesses to accommodate B-double vehicle access on additional Painters Lane accesses (accesses 4,5,6 & 7)
- Widening of Painters Lane to minimum of 7m from Braidwood Road to the Painters Lane Site access 7.

We have reviewed the following documents provided as part of the preparation of our advice.

- Flood Assessment Report – Proposed Merino Solar Farm and BESS, Goulburn, NSW (Footprint Sustainable Engineering, August 2025)
- Environmental Impact Statement – Merino Solar Farm (NGH, November 2025)

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunami in NSW. This role includes planning for, responding to and coordinating the initial recovery from floods. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, particularly the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW.

We recommend flooding issues are considered in accordance with the requirements of NSW Government's Flood Prone Land Policy as set out in the [Flood Risk Management Manual](#) 2023 (the Manual) and supporting guidelines, including the [Support for Emergency Management Planning](#) and relevant planning circulars and directions under the *Environmental Planning and Assessment Act, 1979*, including 4.1 Flooding and PS24-001.

It is understood that in existing conditions, the site and surrounding road network are impacted by flooding in the 5% Annual Exceedance Probability (AEP) event,³ as shown in the modelling provided, and potentially more frequently; however, modelling for events more frequent than the 5% AEP was not provided. In a Probable Maximum Flood (PMF) event the southern part of the site is significantly constrained by flooding that can exceed 1 metre depth, and the northeastern part of the site can also experience flooding in excess of 1 metre along the watercourse.⁴ The hazard level at the site peaks at H5 in a PMF event;⁵ *"Parts of Braidwood and Windellama Roads between the subject site and Goulburn become inundated by floodwater in events greater than the 5% AEP event and as such the potential for flood evacuation from the project site is limited".*⁶ Further, *"flood modelling shows that **inundation may be relatively long lasting when floods occur**".*⁷

² NGH. 2025. Environmental Impact Statement, page xxii

³ Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 2.3

⁴ Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 4.1

⁵ Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 4.3

⁶ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

⁷ NGH. 2025. Environmental Impact Statement, page 25

In summary, we:

- **Recommend** the Department of Planning, Housing and Infrastructure should request the Flood Impact and Risk Assessment (FIRA) be updated as per the Secretary's Environmental Assessment Requirements (SEARs) issued for the Project.^{8 9} While we understand that the operational life of the project is approximately 35 years, we **emphasise** that for flood emergency management purposes, consideration must be given to events up to and including the PMF to understand if flood risks to life and property associated with the proposal can be appropriately mitigated.
- **Recommend** consideration is given to the safety of access/egress to the site and **advise** an analysis of flooding impacts on site access roads should be undertaken in an updated FIRA, including frequency and duration of inundation, flood depths at the road closure points and any isolation risks for the site as a result. **Evacuation must not require people to drive or walk through flood water.**
- **Emphasise** that as per the NSW State Flood Plan¹⁰ and the Goulburn Mulwaree Flood Emergency Sub Plan,¹¹ evacuation is the preferred emergency management strategy for people impacted by flooding. The strategy of isolation or sheltering in buildings surrounded by flood water are not equivalent, in risk management terms, to evacuation, and it should not be used to justify *future development*.
- Should a shelter in place strategy be proposed, we recommend the proposal **demonstrates consistency** with the [Shelter in Place Guideline](#), to ensure the risk to life can be adequately managed and/or mitigated.
- **Support** the flood mitigation approach to locate *all buildings and structures (including solar arrays) associated with the proposal (..) outside high hazard areas (H5 and above) where they may be vulnerable to structural damage and have significant impact on flood behaviour,*¹² and **recommend** this is informed by pre- and post-development modelling for flood events up to and including the PMF.
- **Recommend** consulting with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) regarding the impact of the proposed development on flood behaviour at the site and for adjacent and downstream areas.
- **Recommend** considering flooding as part of the cumulative impact assessment for the Project.¹³
- **Recommend considering** flood resilience of the road infrastructure servicing the site. Ideally, the access/egress routes (including any internal tracks) should provide rising road access, where feasible without causing negative impacts. This is important to avoid people becoming trapped at the site due to localised flooding, which may impede and delay evacuation.
- **Recommend** considering flood resilience of the solar farm infrastructure which is likely to be damaged or contaminated by flood water to events up to and including

⁸ DPE. 2023. LU01 Flood Risk Management Guideline: Flood Risk and Impact Assessment

⁹ NGH. 2025. Environmental Impact Statement, Appendix A, page A-IX

¹⁰ NSW Government. 2024. NSW State Flood Plan. Section 5.1.7, page 34

¹¹ NSW SES. 2021. Goulburn Mulwaree Flood Emergency Sub Plan. Section 1.6.2, page 6

¹² Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

¹³ NGH. 2025. Environmental Impact Statement, page 323

the PMF or in areas of less risk, where feasible, to minimize risk to property and financial losses.

Please note that **the NSW SES does not have the statutory authority to endorse private evacuation plans, nor does it have the resources to review and comment on private plans for individual businesses.**

You may also find the following Guidelines on the NSW SES website useful:

- [Reducing Vulnerability of Buildings to Flood Damage](#)
- [Designing Safer Subdivisions](#)
- [Managing Flood Risk Through Planning Opportunities](#)

Please feel free to contact Ana Chitu via email at rra@ses.nsw.gov.au should you wish to discuss any of the matters raised in this correspondence. The NSW SES would also be interested in receiving future correspondence regarding the outcome of this referral via this email address.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'P. Cinque'.

Peter Cinque
Senior Manager, Emergency Risk Management
NSW State Emergency Service

ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline¹⁴

Principle 1 Any proposed Emergency Management strategy should be compatible with any existing community Emergency Management strategy.

Any proposed Emergency Management strategy for an area should be compatible with the strategies identified in the NSW State Flood Plan¹⁵ and the Goulburn Mulwaree Flood Emergency Sub Plan,¹⁶ where evacuation is the preferred emergency management strategy for people impacted by flooding.

The site should be closed early and any works postponing, if any evidence leads to an expectation of flooding, to mitigate risk to life from flooding and other hazards associated with inundation of the site and electrical infrastructure (i.e. electrical hazards¹⁷) during both the construction and operation phases. During site works, check the Bureau of Meteorology website prior to start of the workday for any Severe Weather Warnings that may impact this area. There are no official flood warning systems currently in use for Wollondilly or Mulwaree Rivers flooding at Goulburn,¹⁸ therefore there may be no formal Flood Warning products and river level predictions for this area.

Principle 2 Decisions should be informed by understanding the full range of risks to the community.

Decisions relating to future development should be risk-based and ensure Emergency Management risks to the community of the full range of floods are effectively understood and managed. Risk assessment should consider the full range of flooding, including events up to the Probable Maximum Flood (PMF) and not focus only on the 1% Annual Exceedance Probability (AEP) flood event, along with climate change impact considerations.

It is understood that in existing conditions, the site and surrounding road network are impacted by flooding in the 5% AEP event,¹⁹ as shown in the modelling provided, and potentially more frequently; however, modelling for events more frequent than the 5% AEP was not provided. In a 1% AEP event, flooding across the site is generally shallow, with the exception of some areas that can see flood depths in excess of 0.5 - 1 metre,²⁰ such as the southern part of the site, and the areas along the watercourses that traverse the site and the existing farm dams. We note that Saltpetre Creek bisects the southern portion of the project

¹⁴ NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline

¹⁵ NSW Government. 2024. NSW State Flood Plan. Section 5.1.7, page 34

¹⁶ NSW SES. 2021. Goulburn Mulwaree Flood Emergency Sub Plan. Section 1.6.2, page 6

¹⁷ NGH. 2025. Environmental Impact Statement, page 262

¹⁸ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 74

¹⁹ Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 2.3

²⁰ Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 3.1

site, which is flatter and more low lying compared to the northern part.²¹ In a PMF event the southern part of the site is significantly constrained by flooding that can exceed 1 metre depth, and the northeastern part of the site can also experience flooding in excess of 1 metre along the watercourse.²² The hazard level at the site peaks at H5 in a PMF event.²³

However, we note that the Flood Assessment Report did not include post-development modelling beyond the 1% AEP event, nor did it provide information on flood function, flooding impacts on site access/egress, time to overtopping of roads, and duration of inundation and isolation of the site to inform appropriate flood mitigation and emergency response strategies. We **caution** that if development is approved without providing a thorough Flood Impact and Risk Assessment (FIRA) to clearly outline the full extent of flood risks at the site (up to and including the PMF) and demonstrate the suitability of any proposed flood emergency management and mitigation strategies, this could result in risks to life and property not being appropriately managed.

As per the Secretary's Environmental Assessment Requirements (SEARs) issued for the Project,²⁴ a FIRA must be prepared in accordance with the Flood Impact and Risk Assessment – Flood Risk Management Guide LU01.²⁵ While we understand that the operational life of the project is approximately 35 years, we **emphasise** that for flood emergency management purposes, consideration must be given to events up to and including the PMF to understand if flood risks to life and property associated with the proposal can be appropriately mitigated.

We support the flood mitigation approach to locate *all buildings and structures (including solar arrays) associated with the proposal (..) outside high hazard areas (H5 and above) where they may be vulnerable to structural damage and have significant impact on flood behaviour,*²⁶ and **recommend** this is supported by pre- and post-development modelling for flood events up to and including the PMF.

We also note that the solar panel infrastructure (fixed solar panels module frames, solar tracking modules, etc.) and electrical infrastructure (including power conversions stations and the proposed substation) are proposed to be located clear of the predicted 1% AEP flood level plus appropriate (min 500mm) freeboard, and the solar array mounting piers, where located in the floodplain, should be designed to withstand the forces of floodwater (including any potential debris loading) up to the 1% AEP flood event.²⁷ We **recommend** considering flood resilience of the infrastructure which is likely to be damaged or contaminated by flood water,

²¹ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 3 & 16

²² Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 4.1

²³ Footprint Sustainable Engineering. 2025. Flood Assessment Report, Figure 4.3

²⁴ NGH. 2025. Environmental Impact Statement, Appendix A, page A-IX

²⁵ DPE. 2023. LU01 Flood Risk Management Guideline: Flood Risk and Impact Assessment

²⁶ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

²⁷ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

to events up to and including the PMF, where feasible, to minimize risk to property and financial losses.

The proposal also includes road upgrades, including at the Windellama Road site access (access 1), at the Braidwood Road / Painters Lane intersection (access 2), the additional Painters Lane accesses (accesses 4,5,6 & 7), and widening of Painters Lane from Braidwood Road to the Painters Lane Site access (access 7).²⁸

Noting the project includes construction of internal tracks and upgrades to access roads, including watercourse crossings, we **recommend considering** flood resilience of the road infrastructure servicing the site. Ideally, the access/egress routes (including any internal tracks) should provide rising road access, where feasible without causing negative impacts. This is important to avoid people becoming trapped at the site due to localised flooding, which may impede and delay evacuation.

To mitigate risk to life from flooding and other hazards associated with inundation of the site and electrical infrastructure (i.e. electrical hazards²⁹) during both the construction and operation phases, we **recommend** closing the site down early and postponing any works, if there is a risk of flooding, on receipt of advice from the Bureau of Meteorology (BoM), or when other evidence leads to an expectation of flooding. During site works, check the BoM website prior to start of the workday for any Severe Weather Warnings that may impact this area. We note there are no official flood warning systems currently in use for Wollondilly or Mulwaree Rivers flooding at Goulburn,³⁰ therefore there may be no formal Flood Warning products and river level predictions from the BoM for this area.

The modelling shows *some minor increases in flood levels (up to 10mm) (..)that occur locally within the development footprint.*³¹ We also **recommend** consulting with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) regarding the impact of the proposed development on flood behaviour at the site and for adjacent and downstream areas.

Noting the environmental impact assessment identified *pollution risks from leakage of stored pollutants (hydrocarbons, pesticides, solvents),*³² we **recommend** locating such storage areas to the parts of the site that are above the PMF to reduce risks of exposing persons onsite or downstream to polluted floodwater.

Principle 3 Development of the floodplain does not impact on the ability of the existing community to safely and effectively respond to a flood.

²⁸ NGH. 2025. Environmental Impact Statement, page xxii

²⁹ NGH. 2025. Environmental Impact Statement, page 262

³⁰ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 74

³¹ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 21

³² NGH. 2025. Environmental Impact Statement, page 264

The ability of the existing community to effectively respond (including self-evacuating) within the available timeframe on available infrastructure is to be maintained. It is not to be impacted on by the cumulative impact of new development.

Risk assessment should have regard to flood warning and evacuation demand on existing and future access/egress routes. Consideration should also be given to the impacts of localised flooding on evacuation routes.

It is understood that primary site access will be provided via Windellama Road for the Northern section and there will be four access points from Painters Lane, via Braidwood Road, for the Southern section. There will be an emergency access option - Braidwood Road (north of primary access) and an Over Size Over Mass (OSOM) access from Gundry Lane (limited movements).³³

We note that *parts of Braidwood and Windellama Roads between the subject site and Goulburn become inundated by floodwater in events greater than the 5% AEP event and as such the potential for flood evacuation from the project site is limited.*³⁴ Further, *flood modelling shows that inundation may be relatively long lasting when floods occur.*³⁵ We also note that the broader road network into Goulburn is constrained by overland and mainstream flooding at multiple locations.³⁶ Key routes may first be inundated by overland flooding in more frequent events than what is expected from mainstream flooding.³⁷ If evacuation routes are cut by localised flooding, it could result in evacuation not being completed in time. The problem of localised closure of roads due to inadequate stormwater capacity can be critical where the available warning and evacuation time is short.

We **recommend** consideration is given to the safety of access/egress to the site and **advise** an analysis of flooding impacts on site access roads should be undertaken in an updated FIRA, including frequency and duration of inundation, flood depths at the road closure points and any isolation risks for the site as a result. The analysis of the impact of flooding on the roadways should go beyond immediately adjacent to the site to fully understand the isolation risks and evacuation constraints. **Evacuation must not require people to drive or walk through flood water.**

The flood assessment notes that a *flood emergency response plan should be developed for the site detailing the prevention, preparation, response and initial recovery arrangements for flooding. In this regard it is recommended that suitable flood refuges be created within project*

³³ NGH. 2025. Environmental Impact Statement, page xxii

³⁴ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

³⁵ NGH. 2025. Environmental Impact Statement, page 25

³⁶ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 38 - 40

³⁷ GRC Hydro. 2022. Goulburn Floodplain Risk Management Study and Plan, page 40

area such that all areas within the site have safe and reliable access to temporary flood refuge facilities.³⁸

We **support** developing a Flood Emergency Response Plan (FERP) for the site³⁹ to be robust, thorough and detailed enough to address all aspects of a flood emergency, including the safety of people and mitigating damage to property. It should include:

- a mechanism for alerting any future site users of the risk and the need to evacuate and when.
- responsibilities, transportation, medical emergency, vulnerabilities, flood forecasting and warning, flood emergency response triggers, evacuation, any sheltering procedures and capability assessments, and plan dissemination and review.
- incorporate early evacuation triggers for the site. Please note there are no formal flash flood warnings available for the site, therefore Severe Weather/Thunderstorm Warnings would be the most appropriate form of advice. Business owners/operators must be weather aware and act early on publicly broadcast severe weather and flood warnings.
- a testing, monitoring and review schedule should be in place and the FERP should be exercised and updated at regular intervals and whenever additional flood information is available or highlighted during the drills or flood events.
- Please note that **the NSW SES does not have the statutory authority to endorse private evacuation plans, nor does it have the resources to review and comment on private plans for individual businesses.**

Importantly, a private flood management plan is insufficient to address flood risk on this site.

However, we **advise** that the strategy of isolation or sheltering in buildings surrounded by flood water are not equivalent, in risk management terms, to evacuation, and it should not be used to justify *future development*. Should a shelter in place strategy be proposed, the proposal must **demonstrate consistency** with the [Shelter in Place Guideline](#), **prior to consent being granted**, to ensure the risk to life can be adequately managed and/or mitigated.

Development strategies relying on an assumption that mass rescue may be possible where evacuation either fails or is not implemented are not acceptable to the NSW SES.

Principle 4 Decisions on development within the floodplain does not increase risk to life from flooding.

Managing flood risks requires careful consideration of development type, likely users, and their ability respond to minimise their risks. This includes consideration of:

³⁸ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

³⁹ Footprint Sustainable Engineering. 2025. Flood Assessment Report, page 22

- **Isolation** – There is no known safe period of isolation in a flood, the longer the period of isolation the greater the risk to occupants who are isolated.
- **Secondary risks** – This includes fire and medical emergencies that can impact on the safety of people isolated by floodwater. The potential risk to occupants needs to be considered and managed in decision-making.
- **Consideration of human behaviour** – The behaviour of individuals such as choosing not to remain isolated from their family or social network in a building on a floor above the PMF for an extended flood duration or attempting to return to a building during a flood, needs to be considered.

Principle 5 Risks faced by the itinerant population need to be managed.

Any Emergency Management strategy needs to consider people visiting the area or using a development.

Principle 6 Recognise the need for effective flood warning and associated limitations.

An effective flood warning strategy with clear and concise messaging understood by the community is key to providing the community an opportunity to respond to a flood threat in an appropriate and timely manner.

Principle 7 Ongoing community awareness of flooding is critical to assist effective emergency response.

Development within a floodplain will necessitate ongoing involvement from the NSW State Emergency Service (SES) in community awareness, preparedness, and response activities. It is essential that all site users, both during and after the construction phase, are informed of the flood risk and the measures in place to reduce risk to life. This includes:

- Raising awareness of flood risk
- Promoting preparedness actions
- Installing appropriate signage
- Conducting emergency drills